THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A sealing mechanism for a gas chromatograph machine comprising:

a weldment attachment mountable at the weldment assembly of a gas chromatograph machine and having a passage therethrough for gas communicated to the weldment assembly; and

actuating means for actuating a direct force on the weldment attachment to linearly move it towards an injection port of the gas chromatograph machine and sealingly clamp the weldment attachment onto the injection port, wherein the actuating means does not apply torsional forces on the weldment attachment.

2. The sealing mechanism claimed in claim 1, wherein the actuating means is a hinged lever.

3. The sealing mechanism claimed in claim 2, wherein the lever is attachable to and leverable against an external thread at the inlet of the injection port, the lever further having retaining means to retain the lever in a sealed position.

4. The sealing mechanism claimed in claim 2, wherein the lever is hinged to the injection port and has retaining means to retain the lever in a sealed position.

5. The sealing mechanism claimed in claim 2, wherein the hinge on the hinged lever is a multi-pivoting hinge.

6. The sealing mechanism claimed in claim 2, wherein the lever is a latch having two arms pivotably connected to opposing sides of the weldment attachment, the arms being provided with channels on inner faces thereof.

7. The sealing mechanism claimed in claim 6, wherein the channels engage with corresponding protrusions at the injection port such that the pivoting latch is pivotably levered on the protrusions to clamp the weldment attachment onto the injection port.

8. The sealing mechanism claimed in claim 7, wherein the channels are a curved shape such that, during levering, the protrusions follow a curved path in the channels that will cause the weldment attachment to pull down onto the injection port to seal the port.

9. The sealing mechanism claimed in claim 6, wherein the latch has a handle.

10. The sealing mechanism claimed in claim 6, wherein the latch arms terminate in flanges having a cambered edge that, in use, provide a cam surface against the injection port to assist in aligning the latch as it is lowered to close the seal.

11. The sealing mechanism claimed in claim 6, wherein the weldment attachment is an annular base ring.

12. The sealing mechanism claimed in claim 11, wherein the base ring and latch are pivotally connected at hinges located on opposing sides of the base ring.

13. The sealing mechanism claimed in claim 12, wherein each hinge is located on the arms substantially close to the channel such that as the latch is levered to seal the injection port, the hinge follows a path around the protrusion in the channel.

14. The sealing mechanism claimed in claim 6, wherein an adapter ring is mountable on an external thread at an inlet of the injection port, and wherein the lever is

attachable to the adapter ring and leverable against the adapter ring.

15. The sealing mechanism claimed in claim 14, wherein the adapter ring has an internal thread that cooperates with the external thread.

16. The sealing mechanism of claim 14, wherein the adapter ring is provided with at least one pair of pins extending outwardly of opposing sides on the exterior circumference of the adapter ring, the pins engaging the channels in the latch arms.

17. The sealing mechanism claimed in claim 16, wherein more than one pair of opposing pins are provided on the circumference.

18. The sealing mechanism claimed in claim 16, wherein the adapter is secured in place by radially adjustable grub screws.

19. The sealing mechanism claimed in claim 1, wherein the actuating means is a hydraulic or pneumatic actuator.

20. The sealing mechanism claimed in claim 19, wherein the hydraulic or pneumatic actuator is powered by a source of fluid or compressed air respectively.

21. The sealing mechanism claimed in claim 19, wherein the hydraulic or pneumatic actuator is a ram supported on a frame that is supported against the injection port whereby the ram moves the weldment attachment into sealing.

22. The sealing mechanism claimed in claim 19, wherein the hydraulic or pneumatic actuator has a fluid line with

a two-way valve to operate to seal and unseal the sealing mechanism.

23. The sealing mechanism claimed in claim 1, wherein the actuating means is magnetic attraction.

24. The sealing mechanism claimed in claim 23, wherein the magnetic attraction is provided by simple magnets or electromagnets, the magnets being mounted on a frame supported against the injection port.

25. A sealing mechanism for a gas chromatograph machine comprising:

an annular base mountable at the weldment assembly of a gas chromatograph machine, the base having a passage therethrough for gas communicated to the weldment assembly;

a lever pivotally connected to the annular base and pivotally attached to an injection port of the gas chromatograph machine, wherein the base is adapted to be seated on top of the injection port and sealed against thereto by pivotally moving the lever to apply a direct force and clamp the base onto the injection port.

26. A sealing mechanism for a gas chromatograph machine comprising:

an annular base mountable on the inlet weldment assembly of a gas chromatograph machine, the base providing a passage therethrough for gas;

a latch having two arms pivotally connected on opposing sides on the exterior circumference of the annular base, the arms being provided with hinging means to hingedly attach the latch to a corresponding attachment on an injection port of the machine, the base being mountable on the injection port, wherein the latch is pivotally levered against the injection port to directly clamp the base onto the injection port in sealing engagement and without imparting torsional force on the base.

27. The sealing mechanism claimed in claim 26, wherein the side arms of the latch contain recesses on inner faces thereof that engage with corresponding pins extending from an adapter ring mountable on the injection port.

28. The sealing mechanism as claimed in claim 27, wherein the pins extend outwardly of opposing sides on the exterior circumference of the adapter.

29. The sealing device as claimed in claim 28, wherein more than one pair of opposing pins are provided on the circumference.

30. The sealing mechanism as claimed in claim 27, wherein the adaptor ring threads onto an external thread of the injection port.

31. The sealing mechanism as claimed in claim 30, wherein the adaptor ring is secured in place by radially adjustable grub screws.

32. The sealing mechanism as claimed in claim 27, wherein the recesses are a curved shape such that, during levering, the pins follow a curved path in the recesses that will cause the base to pull down onto the injection port to seal the port.

33. The sealing mechanism as claimed in claim 26, wherein the base and latch are pivotally connected at hinges located on opposing sides of the base.

34. The sealing mechanism as claimed in claim 33, wherein each hinge is located on the arm substantially close to the recess such that as the latch is levered to seal the

injection port, the hinge follows a path around the recess.

35. The sealing mechanism as claimed in claim 26, wherein the arms terminate in flanges having cambered edges which provide a cam surface against the injection port to assist in correct movement of the latch as it is lowered to close the seal.

36. The sealing mechanism as claimed in claim 26, wherein the latch has a lever handle.

37. A method of sealing a weldment assembly and an injection port on a gas chromatograph machine including:

mounting a weldment assembly onto the injection port, wherein the weldment assembly includes a latch having two arms and is pivotally connected to opposite sides of the exterior circumference of an annular base, the arms having coupling means for coupling with complementary means located at the injection port in order to mount the latch onto the injection port; and

pivotally levering the latch at the coupling to clamp the base down onto the injection port.

38. The method as claimed in claim 37, further including mounting an adapter ring on the injection port, wherein the adaptor ring is provided with pins extending outwardly of its external circumference, the latch arms having recesses that couple with the pins on the adapter.

39. A method of sealing a weldment assembly and an injection port on a gas chromatograph machine including:

mounting a weldment attachment at the weldment assembly, the weldment attachment providing a passage therethrough for gas communicated to the weldment assembly;

actuating an actuating means connected to the weldment attachment, and thereby applying a direct force on the weldment attachment moving it towards the injection port and sealingly clamping the weldment attachment against the injection port, wherein torsional forces are not applied on the weldment attachment by the actuating means.